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ABSTRACT

Project REDEAL (Research and Evaluation of Distance Education for the Adult Learner) has designed a three-semester system for distance education. Design features have been recommended to maximize personal learner success as well as to have an impact on indicators of success. The individualized instructional environment recommended is a specific attempt to allow both sophisticated and naive individualized learners to maximize success. The six-month fall semester is designed to accommodate incoming adult learners with little or no previous distance educational experience. Learners are given maximum attention in a fairly structured individualized environment. The eight-month winter "flex" semester is designed for learners who are prepared for individualized instruction. The flexibility provided by a reduction in pacing and by continuous enrollments for all learners during the first three months allows the institution to accommodate learners with unique time requirements. The two-month summer semester offers intensive courses predicted to be of interest to particular groups (e.g., teachers). The implementation of such a semester system has many implications for the design of instructional systems and learner management systems and for institutional organization. (Guidelines for implementation of the semester system and a four-year evaluation plan are described.) (YLB)

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Project REDEAL

Individualized Instruction Under Control: The Design of Distance Learning Environments to Maximize Learner Success

Dan O Coldeway

REDEAL Technical Report #4

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Abstract

This paper describes a tri-semester system designed specifically for distance education. The goal of the semester system is to increase learner success while maintaining the flexibility provided by an individualized instructional environment. A discussion of the merits of the proposed system is presented along with a plan for evaluating its effectiveness.

Individualized Instruction Under Control: The Design of Distance Learning Environments to Maximize Learner Success

Recent trends in post-secondary education have been directed, among other things, to opening up opportunity for learning to individuals who traditionally have not had such opportunity. Innovative institutions catering to a variety of learners have emerged worldwide. One trend especially interesting in the innovative post-secondary educational sphere involves providing university-level education for adult learners regardless of previous academic background. This is accomplished by a combination of two unique institutional design factors which differ radically from traditional university practices. They are: 1) allowing anyone who can pay the tuition the right to register in a university-level course, and; 2) delivering that course to the group defined above in ways which do not require that that group be in a particular geographical location or work at a particular rate in order to meet artificial deadlines (e.g. semester deadlines).

Over the last decade several innovative post-secondary educational institutions and groups within traditional institutions have begun operations along the lines described above. The Open University in the United Kingdom, The University of Mid-America in the midwestern United States and Athabasca University in Alberta, Canada are examples of such institutions currently in operation.

Because of the unique design features described above, institutions attempting to use them have had to pioneer methods, rules, and procedures to reach students without violating the basic design goals that underlie the institutional mandate. Providing individualized instruction, at a distance, for a learner group that tends to be highly heterogenous along almost all dimensions, is quite a challenge and one that will continue to require much attention by researchers and practitioners alike.

This paper is an attempt to describe, as a result of research and experience over the last two years at Athabasca University, the design of a distance educational environment intended to maximize learner success. The design described in this paper is not modelled after any known institution. Moreover, it is not a design that has been empirically tested. However, the parameters of this design have been derived from the careful examination of data, information, and experience over the last two years as a result of a research and development project focussing on the motivation and management of the adult learner in a distance educational setting. This project entitled Project REDEAL (Research and Evaluation of Distance Education for the Adult Learner), was an attempt to better understand the problems both the learner and the institution encounters when individualized instruction at a distance is the goal.

Measuring Learner Success

Given that the focus of Project REDEAL was to better understand

the variables which impact learner success and that the intention of this paper is to describe variables which the author feels will ultimately improve learner success, it is important to have a clear definition of what learner success is and how it can be measured.

Learner success can be measured in two basic ways. First, it can be measured from the learner's perspective. That is, the learner can be asked whether he or she feels they had a successful experience (whatever that is) as a result of participating as a learner. This type of success may be totally unrelated to whether the learner completed a course or program of study, performed well on exams and assignments, or worked at a particular rate through the course or program. Although many have argued that this type of success is "all that counts" when it comes to reaching the adult learner, reliable and accurate assessments of personal success are extremely difficult to measure.

The second type of learner success is measured from the institutional perspective and uses indicators of success rather than the learner's personal opinion. Indicators such as course completion, continuation in programs of study, rate of progress on course assignments, above average academic performance within courses, etc. often serve as indicators. Since most of these indicators are directly tied in with measures of learning, success is therefore clearly defined by the amount or rate of performance of a given learner. Moreover, such indicators are relatively easily monitored and provide fairly specific information about learner success (i.e. an objective rather than a subjective assessment of success.

For most institutions, both types of learner success are of interest. However, in most cases of personal success (the first type) is usually inferred as a result of some measure of success indicators (the second type). This paper is no exception. The design features outlined in this paper are intended to maximize personal learner success. However, the design features are specifically recommended because of their intended impact on the indicators of success previously described.

Individualized Instruction Under Control

The basic concepts of individualized instruction are not unique to distance education nor are they relatively new. Individualized instructional techniques like PSI (Keller, 1966); the Audio-Tutorial Approach (Postlethwait, 1972); and Mastery Learning (Bloom, 1971) have been used, researched, and evaluated in both traditional and innovative post-secondary educational institutions (Kulik et al., 1976).

Although many of the basic concepts of individualized instruction are well understood by practitioners and researchers alike, their implementation in any new instructional environment must be done carefully and systematically in order to avoid the types of problems described by many users (e.g. extreme learner procrastination, a high learner attrition rate, de-personalization of the learning experience, etc.). The problem becomes even more complex when other variables are entered into the individualized instruction equation. Variables like distance learning (a sophisticated form of correspondence eduacation) and an

adult learning population with a wide range of academic backgrounds and experiences complicate the matter further. Since the majority of any learner population (especially an adult learner population) have had relatively little experience with individualized instruction (that is not the way most educational environments do their business) it is not surprizing that many individualized instructional environments have difficulties. Learners are simply not prepared with the skills necessary to engage in an individualized learning process and many find their existing repetoire of "student skills" dysfunctional in the individualized instructional environment.

In contrast to the majority of learners who require either training or experience with individualized instruction before they respond well to its requirements, there are a minority of learners who thrive on the flexibility individualized instruction afford them. In the design of any instructional environment which attempts to reach as many learners as possible, this group must also be taken into consideration.

The individualized instructional environment recommended in this paper is a specific attempt to overcome the problems outlined above. Moreover, it is an attempt to allow both the sophisticated individualized learner (i.e. the self-directed learner (Knowles, 1975)) and the naive individualized learner to maximize success.

Prior to describing the parameters of the instructional environment by this paper, it is important to review the assumptions underlying its design. They are as follows:

a. that the Fall of the year is a time that many people are ready to become more serious learners and participants in university-level education;

b. that selected groups of learners may be interested in beginning courses and programs at other times during the year and should be afforded that opportunity.

Recommended Design for a Distance Learning Environment

Figure 1 describes the general parameters of an open admissions semester system. The descriptions below describe each semester in detail:

Fall Semester. The Fall semester is designed as a six-month semester with a fixed start date for all learners. That is, all learners must register for courses offered in the Fall semester prior to October 1. Courses conducted during the Fall semester are designed specifically to begin on October 1 and be completed by March 31.

The Fall semester is used specifically for learners who have not previously enrolled in a distance delivery course offered on an individualized basis. Courses in the Fall semester are paced according to a schedule developed for the particular course over the six-month period. Learners are expected to work within the pacing guidelines. However, every attempt is made during the course design period in designing the course to give ample opportunity for inexperienced learners to progress through the course materials in

the time available.

The pacing Fall semester is intended to provide incoming learners with a more structured learning environment for three major reasons. First, many incoming adult learners have been away from formal educational experiences for some time. They may have lost whatever self-directive skills they once had. Second, although general pacing guidelines are used, the course is relatively individualized within units. Such an experience should give the naive learner an opportunity to experience individualized instruction in "small bites" at the same time they are getting used to the distance delivery mode of instruction. Third, the time structure of the Fall semester should give the institution an opportunity to diagnose learners with unique learning or personal time management problems quickly. These people can then be given the type of assistance or training they require to be more effective distance learners.

Figure 1 goes about here

The Fall semester proposal also has significant advantages for the institution. First, Fall registration by a cut-off date allows the institution to "gear up" its registrarial staff for a large influx of learners. Once registration for the Fall is completed the institution would no longer have to worry about registration in the Fall courses unless the same courses were again being offered in the Winter semester.

Second, the people coordinating the delivery of the Fall semester courses would know at the beginning of the semester who was enrolled, how many learners were enrolled, and when to expect assignments coming in, exams taken, etc. Again, staffing for the delivery of the course could be pre-planned to match the characteristics of the course design and Fall semester schedule.

Third, the course design, development and production system could also be organized around the Fall semester system. Courses being planned for delivery in the Fall semester would clearly have to be ready by a particular date. That date could correspond to the date by which courses were entered into the Fall semester timetable. Courses not prepared by that date would not be offered during the Fall semester and would either be offered in later semesters or the following year.

Fourth, the student materials centre handling the distribution of course materials to Fall semester learners could also be staffed to handle peak Fall loads. Course registration dates and student materials distribution could be coordinated to allow all learners to receive course materials during September, well in advance of the Fall semester start date.

In summary, the Fall semester is specifically designed to accomodate the incoming adult learner with little or not previous distance educational experience. Fall semester learners would be

given maximum attention in a fairly structured individualized environment. Junior level courses would make up the bulk of Fall semester offerings.

Winter Semester. The Winter "flex" semester begins in January and continues for eight months. The intention of the Winter "flex" semester is to provide a more individualized educational environment for those learners who do not require more structure or for some reason cannot accomodate to the structured Fall and Summer semesters. Incoming learners with little or no experience with distance education would be encouraged to enroll in the Fall prior to taking a course in the Winter semester.

The Winter "flex" semester attempts to capitalize upon a truly individualized rate of study system and continuous enrollment for the first three months. That means a learner can begin a Winter semester course anytime from January 1 through March 31. That learner can work through the course at any rate he/she chooses with a general guideline that all course work must be completed by the end of July of the year he/she enrolls. Extensions to the end of July deadline are possible if the learner is willing to pay additional tuition for each month's extension.

Given that learners may be in differing places in a given course during the Winter semester, the Winter semester system design attempts to be as flexible as possible in dealing with individual learners. Staffing is arranged to allow Winter semester learners flexible access to tutors and instructors, flexible examination schedules, etc. The

only time regulation affecting Winter semester learners involves the end of July deadline (i.e. the Winter semester courses are not paced within the semester period).

The rationale for the Winter "flex" semester with continuous three-month enrollments and no pacing is as follows: first, there is considerable evidence that many adult learners require extreme flexibility in order to participate in educational programs. Often even light pacing, exemplified by the Fall semester, prevents some people from participating as learners. Second, learners with experience in individualized instructional environments generally find the flexibility afforded to them by such a system highly desirable. They can proceed at a rate commensurate with their ability without experiencing the punitive effects of missing deadlines which are often arbitrarily imposed. Third, a movement toward a more total individualized learning environment will give learners an experience more like the real world situation they will encounter when they are not "official learners" in the institutional sense. That is, a hidden objective of such a system is to promote self-directed learning skills and attitudes in an effort to make learning a more lifelong activity. As learners become comfortable with learning on their own, they may be able to generalize those skills and attitudes to situations outside of the institutional context.

The Winter semester also provides the advantage of being able to offer courses with both large and small enrollments. Staffing can be

determined in advance based upon expected enrollments and adjusted over the first three-month period based upon incoming learner data. Once the three month continuous enrollment time is over, the instructional staff working with a course can then focus attention on the learners enrolled, helping them progress through the course in the time available. Learners having difficulty with the course or the total individualized system can also be counselled during the Winter semester and encouraged to enroll in Fall semester courses.

The Winter semester system shares the same advantages of improved registration, student materials distribution, and course development planning as the Fall semester. Moreover, because course offerings would be divided between semesters, internal academic staff would be free at a predictable period of time to engage in course development and other institutional activities. In contrast, when a course they are involved with is being offered, they would be able to give it more attention during the semester period.

In summary, the Winter "flex" semester is designed to accomodate the learner who is prepared for individualized instruction. The flexibility provided by a reduction in pacing and by continuous enrollments for all learners during the first three months should allow the institution to accomodate learners with unique time requirements.

Summer Semester. As shown in Figure 1, the Summer Semester is designed as a two-month semester beginning June 1 and continuing

through July 31. The Summer semester is specifically intended for courses which can be taught effectively in two months. However, learners are informed that the involvement with Summer semester courses is much more intensive than courses offered at other times during the year.

The Summer semester is designed to meet the needs of learners who have time available in the Summer and wish to complete courses and programs in short "bursts" of time. Only a limited offering of courses predicted to be of interest to particular groups of people having time in the Summer (e.g. teachers) would be offered during the Summer semester.

The Summer semester affords advantages to the institution which are both similar to the ones offered by the other semesters and unique to the Summer semesters. Institutional planning and staffing for Summer semester courses would be made possible by fixing a registration date one to two months prior to the Summer semester. Persons working on Summer semester courses could concentrate on course delivery over the two-month period. Persons not working on Summer semester coures would be free for course development, university activity, research, extended time off for vacation, professional development, etc.

The unique advantages of the Summer semester are as follows: first, the institution could offer courses using visiting staff. This advantage to learners interested in unique course offerings would far outweigh the extra costs. Second, the Summer semester could be used

to intensively field test course materials designed for more individualized instruction in the next year's Fall or Winter semesters. Test courses could be offered in the Summer semester with a limited enrollment using draft materials backed up by an instructor. Third, the Summer semester could be used for resident courses (i.e. those courses requiring that learners attend labs, seminars, workshops, etc.). The Summer semester offerings could even be tied to the Fall and Winter offerings, if necessary, for those courses requiring such activity.

Semester System Summary

The three semester system described above is an attempt to spread the course offerings of an institution across the entire year, maximize staff organization with respect to institutional requirements (both within and outside course delivery), maximize learner success by allowing amount of individualization to vary at different points within an academic year, attempting to put incoming "naive" learners into a more structured learning environment (e.g. the Fall semester), and give the learner population a wide ranging choice of formats for participating in distance delivered courses.

It should be noted that the courses offered during all semesters would, unless designed otherwise, attempt to follow the distance delivery model currently used by Athabasca University. That model relies heavily on a print and mediated package of self-instructional materials in conjunction with a network of telephone tutors provided to each learner. That same format for course delivery would be used

almost exclusively during the Fall and Winter semesters. Classroom instruction would be a possibility, although not the only method, used during the Summer semester.

Implications of the Semester System on Instructional Design

The implementation of a semester system like the one described previously in this paper has many implications for the design of instructional materials and learner management systems. They are as follows:

1) During the design of the learning materials, the course team would know exactly what time frame and schedule the materials are intended to be used within. Amount of instruction, number of assignments, amount of learner-staff interaction, etc. could become a meaningful part of the course design.
2) During the design of the learning materials the course team would have some idea of the type of learner the materials are intended for. Fall semester courses could be designed to accomodate to a generally less sophisticated learner while Winter semester course design could assume a somewhat better skilled learner.
3) Effective learner management planning within semester guidelines could be used to maximize learner completion rates. Computer-managed instructional systems which monitor rate of progress as well as level of learner

performance could easily be used during all semesters.

4) The use of television and radio would be made easier by the semester system. The schedule of programs could correspond to the semester in which the course was being offered.

5) The opportunity for revision and evaluation of course materials would be facilitated by the semester system. Course teams would be able to collect learner performance data quickly during the semester, process it immediately, begin and hopefully complete revisions before the course is offered the next year.

Implications of the Semester System on Institutional Organization

The semester system would require that the institution be capable of dealing much more directly with the individual learner. Learners unfamiliar with the system would require information about enrollment and such information would require staff capable of helping incoming learners in their selection of courses.

The institution would probably also need to be capable of handling learners who for some reason, do not have success in a course within a given semester. It is the intention of this semester system to keep the institution "learner focussed" and therefore, any learner failure should be viewed as a problem with the course, the system, or the interaction between the course and the learner. Rarely, if ever, should the learner be blamed for non-success until all attempts have

been made to deal with their individual problems.

The institution would also have to be capable of tracking the performance of learners within semesters for the purpose of course evaluation. The following types of institutional decisions will undoubtedly have to be made regularly:

a. whether the course materials require revision
b. whether the course can be offered in a different semester without difficulty
c. whether a new course should be offered in a particular semester
d. whether particular course delivery techniques are reaching particular types of learners
e. whether the learner management system used in the course requires revision

All of the above decisions require an extensive and accurate data base. Staff and systems must be made available to gather, process, and report such data on a regular and continuous basis.

Implementation of the Semester System

Putting a unique semester system in place in an institution that does not currently have semesters (or one that has a differing type of semester system) is always problematical. Many of the existing systems within institutions are set up according to its current mode of operation. Changes are always difficult.

The complexity of the semester system described by this paper

demands that sophisticated and dedicated expertise be used to implement the system. The following guidelines are recommended for implementation:

a. That a team of experts on institutional planning and instructional systems design (see Figure 2) be given the responsibility for implementing the semester system.

b. The team would meet and interview all persons within the institutions that are affected by the change over to the semester system. The goal of these meetings would be to assist units within the institution to "gear up" for the semester system.

Figure 2 goes about here

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c. Existing course offerings would be selected for a semester based upon a list generated by the team of experts working closely with each area of study offering the course. The goal of this exercise would be to determine the most appropriate courses for each semester and prepare an evaluative plan to determine whether the selection was made appropriately.

d. Course being prepared would also be given attention

by the team. Course teams would be interviewed to determine the most appropriate courses for each semester. Every attempt would be made to give course team members information relating to course design in direct relationship to the semester system design. A series of seminars would be presented by the team instructing people on the theory and procedures of the semester system in relationship to course materials and learner management design.

e. The semester system would also require that the team spend a considerable amount of time in the planning of a "student information system and computer-managed instructional system" for use by those involved in course delivery, course revisions, and institutional research.

Figure 3 goes about here

Evaluation of the Semester System

Figure 3 indicates the testing period for the semester system described in this paper. An evaluation of the semester system would require a minimum of four years activity defined as follows:

a. Year One: Implementation of the semester system according to the original plan. Data

collected on the effect on students, the institution, etc. Revisions to the semester system plan made for implementation in the following year.

b. Year Two: Implementation of the revised semester system plan. Data again collected on the effect of the system.

c. Year Three: The revised semester system continues to operate for a second year and more data is collected and analyzed.

d. Year Four: The revised semester system continues to operate while the final evaluation report on the system is prepared, studied, and decisions made about the effect on the system.

The above evaluation plan is designed to give the institution ample time to experiment with the semester system, collect necessary data, revise the system as needed, and run the system for at least two complete years in the revised form. The evaluation plan also gives the institution at least six months to study the effects of the system and make decisions regarding continuation of such a system.

The team of experts would also be responsible for the evaluation of the semester system. However, outside evaluators would be used to assess the impact of the system on units within the institution (under the assumption that inside evaluation methods would be somewhat biased).

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Figure 1

Open Admissions Semester System

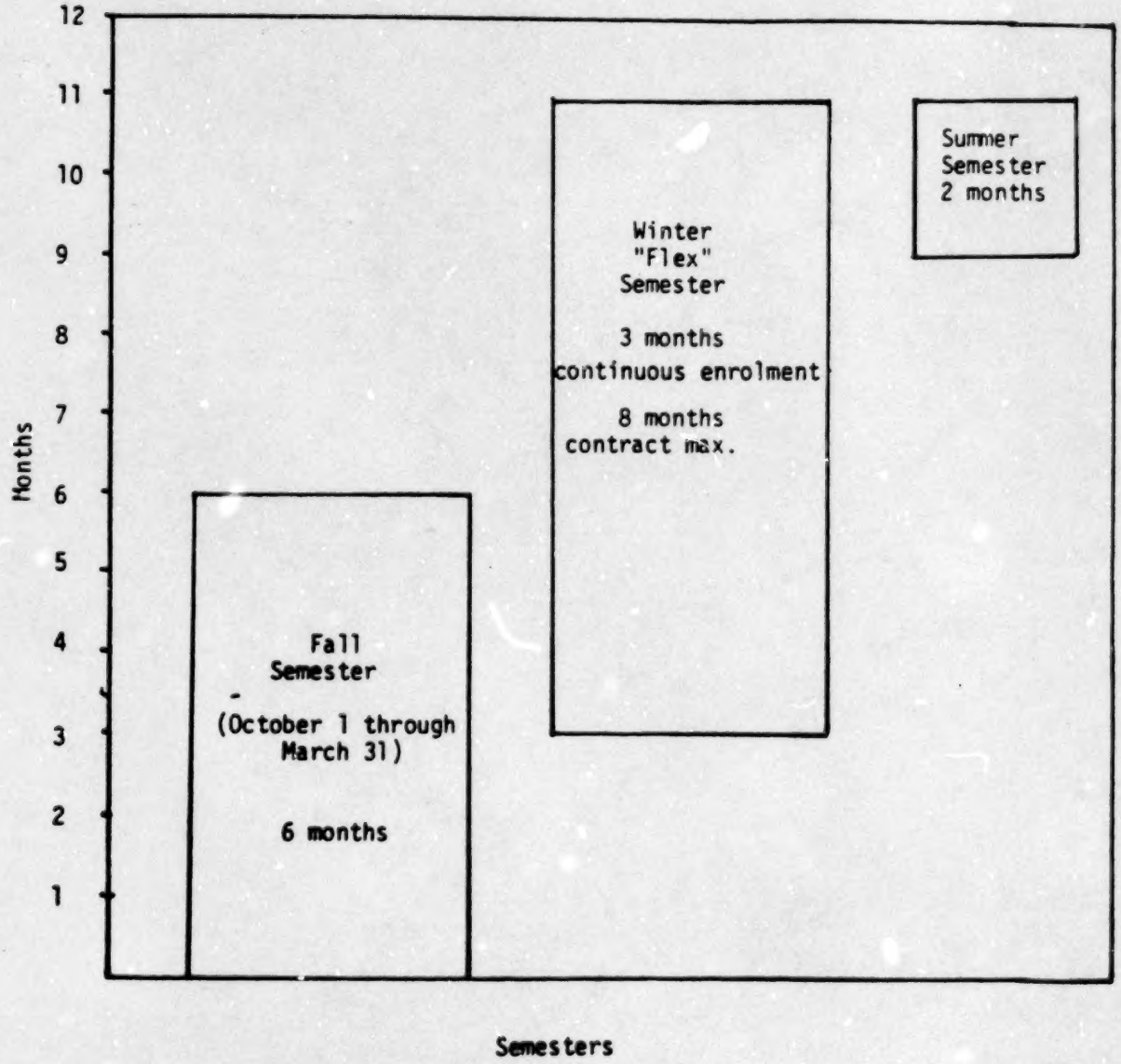

Figure 2

Expert Team Membership for Semester System Implementat'

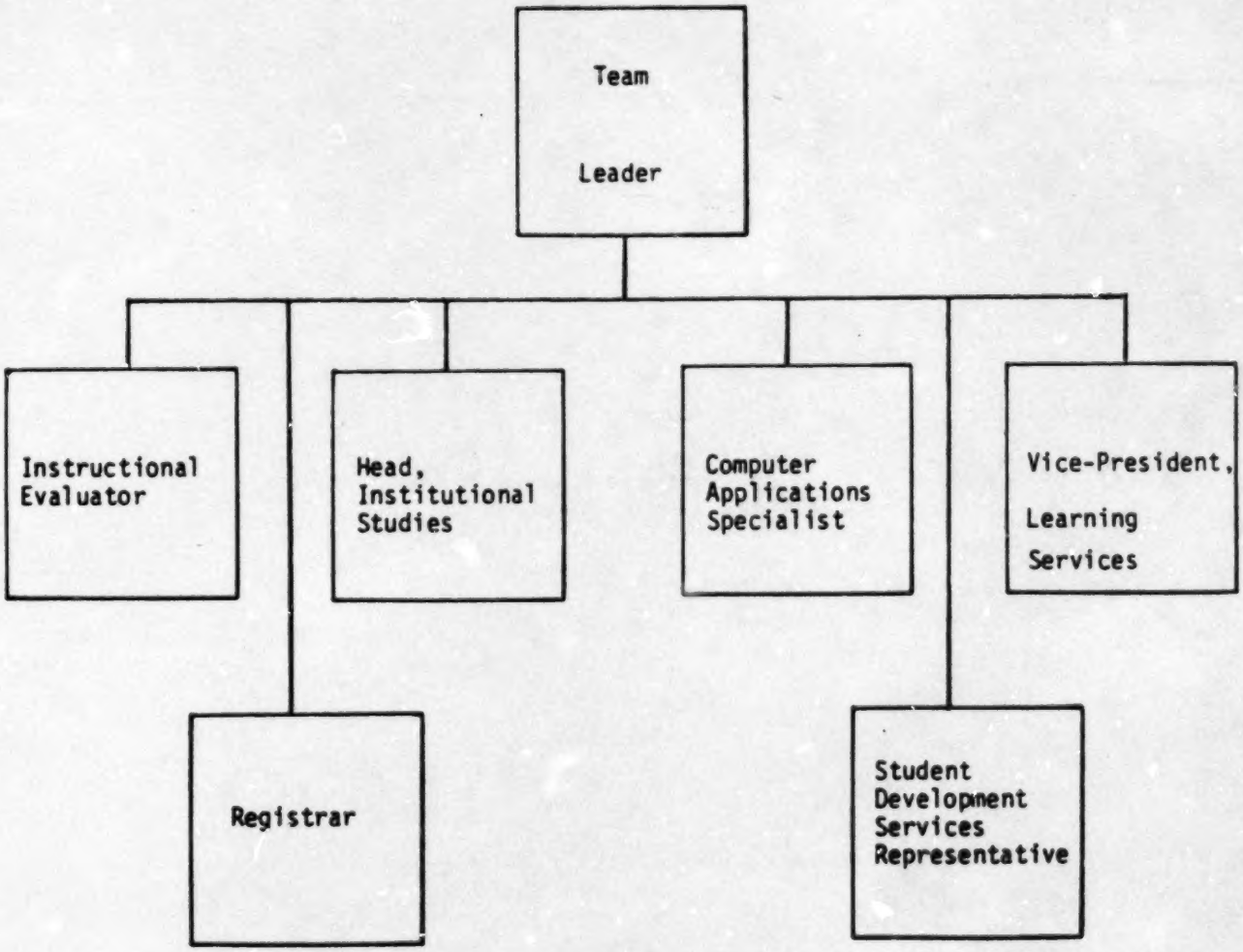

Figure 3

Time Frame for Implementation/Evaluation of Semester System